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RECORD OF DECISION FOR LANDFILL 1 FOR NO FURTHER ACTION NAS FORT WORTH
TX
9/1/1991
RADIAN CORPORATION

211000



**NAVAL AIR STATION
FORT WORTH JRB
CARSWELL FIELD
TEXAS**

**ADMINISTRATIVE RECORD
COVER SHEET**

AR File Number 211

211001



**NO FURTHER ACTION DECISION
DOCUMENT**

*INSTALLATION RESTORATION PROGRAM
SITE LF01, LANDFILL 1
CARSWELL AFB, TEXAS*

FINAL

**DEPARTMENT OF THE AIR FORCE
STRATEGIC AIR COMMAND
OFFUTT AFB, NE**

September 1991

211002

TECHNICAL DOCUMENT TO SUPPORT NO FURTHER ACTION

RECORD OF DECISION

SITE NAME AND LOCATION

Installation Restoration Program Site
Landfill 1, Site LF01
Carswell AFB, Texas

STATEMENT OF BASIS

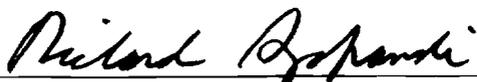
This decision is based on the results of Installation Restoration Program (IRP) Phase I Records Search and Phase II Remedial Investigation studies conducted at Carswell AFB, with reports dated 1984 and 1991, respectively.

DESCRIPTION OF THE SELECTED REMEDY

Based on the current conditions at IRP Site LF01, it has been determined that no significant risk or threat to public health or the environment exists. Therefore, no further action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) is required.

DECLARATION

This decision document represents the selected action for this site developed in accordance with CERCLA, as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA), and the National Contingency Plan (NCP). It has been determined that the selected remedy of no further action is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate, and is cost-effective. The statutory preference for further treatment is not satisfied because further treatment was not found to be necessary. Contaminant levels at the site have been determined to present no significant threat to human health or the environment; thus, no treatment is necessary.



RICHARD SZAFRANSKI, Colonel, USAF
Commander, 7th Wing

Date

211005

NO FURTHER ACTION DECISION DOCUMENT

INSTALLATION RESTORATION PROGRAM
SITE LF01, LANDFILL 1
CARSWELL AIR FORCE BASE, TEXAS

FINAL

SUBMITTED TO:

HQ SAC/DEVR
OFFUTT AFB, NEBRASKA

7 CSG/DEEV
CARSWELL AFB, TEXAS

SITE LF01 DECISION DOCUMENT

CARSWELL AIR FORCE BASE

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SITE LF01 DECISION DOCUMENT
CARSWELL AIR FORCE BASE

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1.0 INTRODUCTION

This decision document (1) describes the history of Carswell Air Force Base (AFB) Landfill 1 (hereinafter referred to as Site LF01), (2) presents the results of field investigations at this site, (3) presents results of the public health and ecological risk assessments for the site, and (4) explains why no further action is recommended. Site LF01 was initially identified in the Installation Restoration Program (IRP) Records Search for Carswell AFB, Texas (CH2MHill, 1984). Site LF01 was subsequently addressed in an IRP Phase II Stages 1 and 2 Draft Remedial Investigation (Radian, 1991). Based on the results of the Records Search and the Remedial Investigation, Walk, Haydel & Associates, Inc. (Walk, Haydel) recommends no further action at Site LF01.

2.0 SITE HISTORY AND DOCUMENTATION SUMMARY

2.1 SITE HISTORY

Landfill sites have been in use at Carswell AFB from the beginning of construction in 1942, until the present time. Some base landfills were located in borrow areas created for runway construction, and others were placed in naturally low or irregular areas adjacent to creeks to increase the usable land for expansion of runway and flightline areas. Site LF01 is, reportedly, the original base landfill and was operated during the 1940s.

Site LF01 is located adjacent to the Trinity River levee at the current location of the Defense Reutilization and Marketing Office (DRMO) storage yard. Due to its age, no records were found concerning past waste disposal practices. However, analytical data obtained in the IRP studies suggest that solvent and metals-bearing wastes may have been among the landfilled wastes. Figure 1 illustrates the location of Site LF01 relative to Carswell AFB and the base environs.

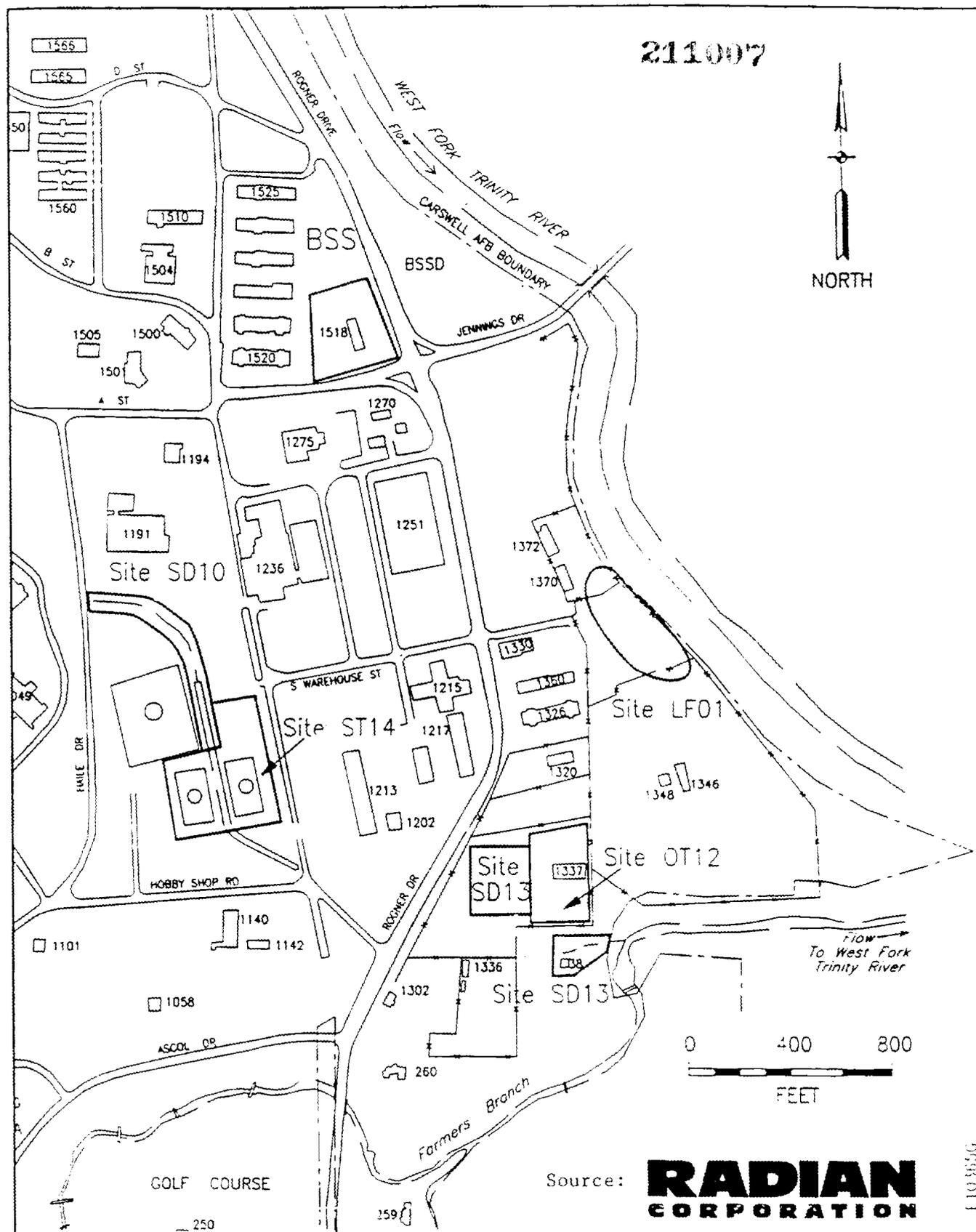


Figure 1. Location of East Area IRP Sites, Carswell AFB, Texas (Radian, 1991)

2.2 SUMMARY OF DOCUMENTATION

The following paragraphs summarize the major findings of the Phase I Records Search and Site Inspection (CH2MHill, 1984), Phase II Stage 1 Report (Radian, 1986), and Final Draft Phase II Stage 2 RI/FS Report (Radian, 1991).

Phase I

The Phase I Records Search was designed to identify and evaluate suspected problems associated with past hazardous material disposal sites. The existence and potential for migration of hazardous material contaminants was evaluated at Carswell AFB by reviewing existing information and base records. Pertinent information included the history of operations, the geological and hydrogeological conditions which may have contributed to the migration of contaminants, and the ecological settings that indicated sensitive habitats or exhibited environmental stress. The records search determined which sites exhibited significant potential for environmental impact and, therefore, warranted further investigation.

In conjunction with the Phase I investigation, Site LF01 was evaluated according to the Hazard Assessment Rating Methodology (HARM). Site LF01 receive an overall HARM rating score of 56, primarily due to the following: (1) the suspected disposal of moderate quantities of hazardous wastes, (2) the proximity of the site to the base boundary, (3) the proximity of the site to the West Fork Trinity River, (4) the presence of residential areas within one mile, (5) an estimated population greater than 100 people within 1,000 feet of the site, (6) the suspected presence of groundwater within 10 feet of the ground surface, and (7) the presence of potable water wells serving the suburbs of Fort Worth less than 3,000 feet from the site. Based on this rating, the Phase I Records Search and Site Investigation recommended implementation of a Phase II monitoring program at Site LF01.

Phase II

The IRP Phase II was intended to provide field confirmation of the extent and location of contaminants. A data collection program was implemented at Carswell AFB to gather information for the following environmental media: geology and soils, geophysics, hydrogeology, and water quality.

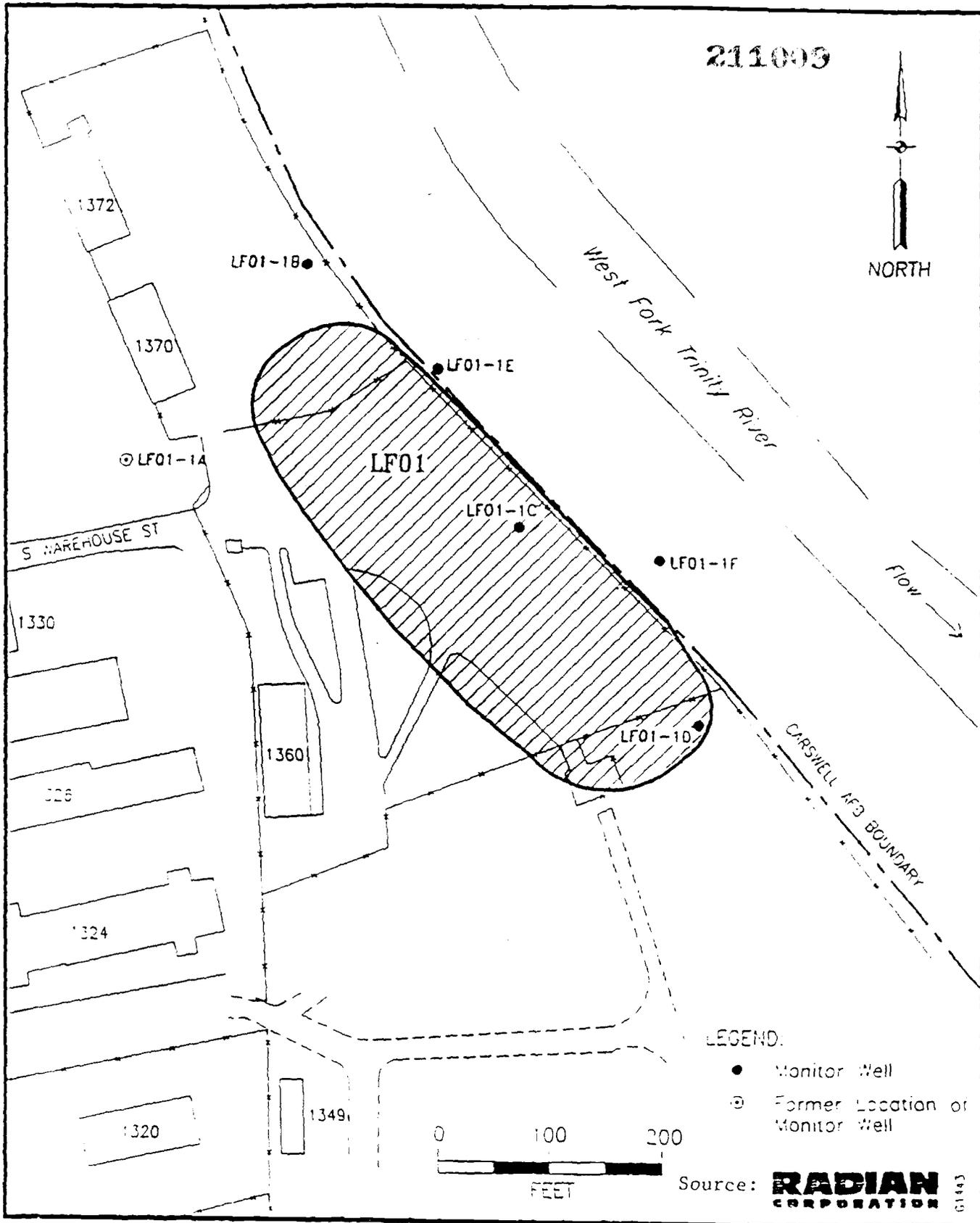


Figure 2. Location of Wells Samples at Site LF01
East Area, Carswell AFB, Texas (Radian, 1991)

Six monitoring wells (four in Stage 1 and two in Stage 2 of Phase II) were installed at Site LF01 (Figure 2). The material encountered beneath Site LF01 consists entirely of fill, clay, and sandy clay. The large amount of fill material encountered indicates that the area has been extensively modified by human activity. Soil analytical results provided no evidence of waste material or contamination by waste constituents. Very low levels of volatile organic compounds (trichloroethylene, vinyl chloride) were detected in some groundwater samples. However, their sporadic occurrence and low concentrations did not suggest the existence of a defined groundwater contaminant plume. Certain metals were detected in concentrations above Maximum Contaminant Levels (MCL) in some unfiltered groundwater samples (i.e., total metals analysis) during Stage 1 testing. It is noted that MCLs are based on "dissolved" and not total metals concentrations. No dissolved metal analyses were performed prior to 1990. No MCLs were exceeded when dissolved metals were compared to the MCL criteria, in Stage 2 testing. Section 3.3 of this document provides detailed analytical results of sampling at Site LF01.

3.0 SITE INSPECTION RESULTS

3.1 SAMPLING METHODOLOGY

Numerous field techniques and analytical methods were used to characterize environmental conditions at Site LF01 during the Phase II effort. The following paragraph summarize the methods and procedures utilized during soil and water sampling efforts at Site LF01.

Soil

The Hollow-Stem auger method was used to perform shallow soil borings and to install groundwater monitoring wells. This method allowed recovery of relatively undisturbed subsurface soil cores, determination of subsurface lithologies and structures, and accurate identification of the water table position. Soil samples were collected with either a split-spoon sampler, a thin-wall sampler, or a CME 5-foot continuous core sampler. The soil samples were described in terms of lithology, moisture content, and evidence of contamination. Lithologic logs were maintained. Selected samples were shipped on ice to laboratories for analysis.

Groundwater

Water levels were measured in each monitor well prior to sample collection, and were recorded in a field notebook or appropriate IRPIMS data collection form. Before samples were collected, a minimum of three well volumes of water were bailed to ensure that representative formation water was collected. Purged water was managed according to the project work plan.

Groundwater samples were then collected using a Teflon™ bailer. After collection, samples were placed in pre-labeled sample bottles and preserved according to reference method requirements.

Groundwater samples for dissolved metals were filtered in the field. Samples were placed in ice chests packed with ice and shipped by overnight delivery to Radian laboratories. To ensure sample integrity, custody seals were affixed to each ice chest and chain-of-custody forms were completed and transmitted with the samples to the laboratory.

3.2 QUALITY ASSURANCE AND QUALITY CONTROL

Carswell AFB groundwater at Site LF01 may be characterized by the primary data set generated from samples collected during April and May 1990. QA/QC results indicate this primary data set was generated under controlled analytical conditions.

3.3 ANALYTICAL RESULTS

The principal constituents identified in groundwater at Site LF01 were total metals, and to a lesser extent, volatile organic compounds (VOCs). In Stage 1, both total metals and VOCs were identified at the site at concentrations below MCLs. All VOCs identified were at very low concentrations (i.e., near instrument detection limit concentrations). Some soil samples, screened for oil and grease, contained concentrations up to 50 milligrams per kilogram (mg/kg, or parts per million).

In the Stage 2 investigation, several metals were detected (as total concentrations) exceeding the MCLs in both rounds of sampling. Again, MCLs are based on dissolved metals. Therefore, this comparison is purely qualitative. Selenium, arsenic, barium, cadmium, chromium, and lead were each detected above the MCLs in one or more samples. However, not all metals were present in all monitoring wells at Site LF01. Based on these data, no metal plumes were identified. Because the metals were generally found in higher concentrations in the downgradient wells relative to background concentrations, the source of metals was suspected to be Site LF01.

VOCs were detected in groundwater samples collected during Stage 2. Trichloroethane (TCE) and vinyl chloride were detected in several wells at levels below their MCLs. No definable VOC plume was identified beneath Site LF01. As a result, oil and grease contamination was not considered significant.

Table 3-1 lists the volatile organic and inorganic constituents for which analyses were performed. Table 3-2 presents a list of all VOCs whose presence was confirmed, along with concentrations detected and the detection limit. A summary of the inorganic

Table 3-1. LIST OF VOLATILE ORGANIC AND INORGANIC PARAMETERS ANALYZED IN GROUNDWATER, SITE LF01, CARSWELL AFB, TEXAS

Organic Parameters	Inorganic Parameters	
	Metals	Non-Metals
1,1,1-Trichloroethane	Aluminum	Chloride
1,1,2,2-Tetrachloroethane	Antimony	Fluoride
1,1,2-Trichloroethane	Arsenic	Nitrate as N
1,1-Dichloroethane	Barium	Orthophosphate
1,1-Dichloroethene	Beryllium	Sulfate
1,2-Dichlorobenzene	Boron	Total Dissolved
1,2-Dichloroethane	Cadmium	Solids
1,2-Dichloropropane	Calcium	
1,3-Dichlorobenzene	Chromium	
1,4-Dichlorobenzene	Cobalt	
2-Chloroethylvinyl ether	Copper	
Bromodichloromethane	Iron	
Bromoform	Lead	
Bromomethane	Magnesium	
Carbon Tetrachloride	Manganese	
Chlorobenzene	Mercury	
Chloroethane	Molybdenum	
Chloroform	Nickel	
Chloromethane	Potassium	
Dibromochloromethane	Selenium	
Methylene chloride	Silicon	
Tetrachloroethene	Silver	
Trichloroethene	Sodium	
Trichlorofluoromethane	Strontium	
Vinyl chloride	Thallium	
cis-1,2-Dichloroethene	Vanadium	
cis-1,3-Dichloropropene	Zinc	
trans-1,2-Dichloroethene		
trans-1,3-Dichloropropene		

Table 3-2. SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN UPPER ZONE GROUNDWATER¹, STAGE 2, PHASE II, SPRING 1990, SITE LF01, CARSWELL AFB, TEXAS

Well No.	Analyte	Concentration ² (µg/L)	Detection Limit (µg/L)
LF01-1C	Chlorobenzene	0.36	0.25
LF01-1C	Vinyl Chloride	0.58	0.20
LF01-1C	cis-1,2-Dichloroethene	0.27	0.20
LF01-1F	Vinyl Chloride	1.1	0.20
LF01-1F	cis-1,2-Dichloroethene	0.47	0.20

Notes:

¹All other analyzed organic compounds (Table 3-1) were non-detectable.

²Confirmed result by second column analysis.

Table 3-3. SUMMARY OF INORGANIC ANALYTES (AS DISSOLVED METALS) IN UPPER ZONE GROUNDWATER (mg/L), STAGE 2, PHASE II, SPRING 1990, SITE LF01, CARSWELL AFB, TEXAS

Analytical Parameter	EPA Primary MCLs (mg/L)	Range of Detection Limits	Range of Concentrations of Constituents Detected	Total Number of Samples		
				Analyses for Constituent (No. of Locations)	With Constituent Detected (No. of Locations)	Exceeding EPA MCL (No. of Locations)
Metals						
Aluminum		0.220	0.29-34.0	10 (5)	5 (5)	0
Antimony		0.110	ND	10 (5)	0	0
Arsenic	0.05	0.0040-0.330	0.0068-0.022	20 (5)	4 (3)	0
Barium	1.0	0.0110	0.043-0.33	10 (5)	10 (5)	0
Beryllium		0.00220	ND	10 (5)	0	0
Boron		0.660	0.94-1.2	10 (5)	2 (1)	0
Cadmium	0.01	0.00550	ND	10 (5)	0	0
Calcium		1.1	140.0-280.0	10 (5)	10 (5)	0
Chromium	0.05	0.0110	0.011-0.037	10 (5)	3 (3)	0
Cobalt		0.0110	0.015	10 (5)	1 (1)	0
Copper		0.0220	0.038	10 (5)	1 (1)	0
Iron		0.0440	0.055-37.0	10 (5)	9 (5)	0
Lead	0.05	0.0030-0.0550	0.0033-0.022	20 (5)	9 (5)	0
Magnesium		1.1	7.0-13.0	10 (5)	4 (2)	0
Manganese		0.0110	0.093-1.3	10 (5)	4 (2)	0
Mercury	0.002	0.00020	ND	10 (5)	0	0
Molybdenum		0.0550	ND	10 (5)	0	0
Nickel		0.0220	ND	10 (5)	0	0
Potassium		3.3	3.5-5.7	10 (5)	4 (3)	0
Selenium	0.010	0.0050-0.330	ND	20 (5)	0	0
Silicon		1.1	7.0-41.0	10 (5)	10 (5)	0
Silver	0.05	0.0110	ND	10 (5)	0	0
Sodium		1.1	21.0-31.0	10 (5)	10 (5)	0
Strontium		0.00330	0.41-1.3	10 (5)	10 (5)	0
Thallium		0.110	ND	10 (5)	0	0
Vanadium		0.0220	0.025-0.066	10 (5)	3 (3)	0
Zinc		0.0220	0.038-0.076	10 (5)	8 (5)	0

ND = Not detected

Table 3-3.

SUMMARY OF INORGANIC ANALYTES (AS DISSOLVED METALS) IN UPPER ZONE GROUNDWATER (mg/L), STAGE 2, PHASE II, SPRING 1990, SITE LF01, CARSWELL AFB, TEXAS (Continued)

Analytical Parameter	EPA Primary MCLs (mg/L)	Range of Detection of Limits	Range of Concentrations of Constituents Detected	Total Number of Samples		
				Analyses for Constituent (No. of Locations)	With Constituent Detected (No. of Locations)	Exceeding EPA MCL (No. of Locations)
Non-Metals						
Chloride		1.0	13.0-48.0	10 (5)	4 (4)	0
Fluoride	4.0	0.10	0.26-0.60	10 (5)	5 (5)	0
Nitrate as N		0.040	0.12-0.40	10 (5)	4 (4)	0
Orthophosphate		0.0100	ND	10 (5)	0	0
Sulfate		1.0-2.0	6.5-370.0	10 (5)	5 (5)	0
Total Dissolved Solids		9.0	650.0-1100.0	10 (5)	5 (5)	0

ND = Not detected

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analytical results for all wells sampled at Site LF01 is presented in Table 3-3.

4.0 PUBLIC HEALTH AND ECOLOGICAL RISK ASSESSMENT

This section presents results of the public health and ecological risk assessments contained in the Baseline Risk Assessment portion of the Remedial Investigation.

4.1 PUBLIC HEALTH

Site LF01 potentially releases VOCs to the air through volatilization; and VOCs, metals, and bis(2-ethylhexyl)phthalate to the groundwater through leachate generation. Potential constituent transport and fate mechanisms from Site LF01 in the air and groundwater include the following: (1) air dispersion, (2) groundwater migration, (3) groundwater discharge to and transport in surface water, and (4) subsequent uptake by plants and animals.

The threat to human health posed by the site was evaluated in terms of noncarcinogenic and carcinogenic risks. The noncarcinogenic health effects of inhalation exposure to constituents originating from the site was determined to be not significant. The individual cancer risk for the maximum on-site and off-site exposed individual, the highest of which is 9 in 10 billion, is inconsequential (i.e., is well below the U.S. EPA 1-in-1 million departure level for significance). The potential for ingestion exposure is limited to ingestion of fish from the West Fork of the Trinity River. The risk of ingestion exposure by this pathway was not quantified because most local fishing takes place in Lake Worth and the groundwater contributions to the river from site LF01 are both not known and based on the data should be low. The potential for dermal exposure to contaminants originating from Site LF01 is remote and therefore was not quantified.

4.2 ECOLOGICAL RISK ASSESSMENT

Site LF01 groundwater constituent concentrations are generally low. As shown in Table 3-3, contaminant concentrations were well below EPA Primary MCLs. Therefore, the risk to terrestrial ecology as a result of bioaccumulation is suspected to be minimal.

5.0 RATIONALE FOR NO FURTHER ACTION

The levels of contaminants detected at site LF01 are low. Based on the results from the Phase I Records Search, the Phase II site studies, and the baseline risk assessment, it is concluded that there is no significant threat to public health or environment at Site LF01.

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Carswell AFB will continue to inform the public of the status of ongoing monitoring efforts at Site LF01 (and the greater East Area). On the basis of Radian's findings, it is recommended that this site be removed from further consideration in the IRP process.

6.0 REFERENCES

- CH2MHill. "Installation Restoration Program Records Search for Carswell Air Force Base, Texas", prepared for Strategic Air Command, Deputy Chief of Staff, Engineering and Services, Offutt Air Force Base, Nebraska 68113, Contract No. F08637-80-G0010-5009, February 1984.
- Radian Corporation. "Installation Restoration Program for Carswell Air Force Base, Texas: Phase II - Confirmation/Quantification Stage 1", prepared for Strategic Air Command, Command Surgeon's Office (HQSAC/SGPB), Offutt Air Force Base, Nebraska 68113, Contract No. F33615-84-D-4402, October 1986.
- Radian Corporation. "Installation Restoration Program (IRP) for Carswell Air Force Base, Texas: Phase II Remedial Investigation for the East Area", prepared for Headquarters Strategic Air Command (HQ SAC/DE), Offutt Air Force Base, Nebraska 68113, Contract No. F33615-87-D-4023, April 1991.
- Radian Corporation. "Installation Restoration Program (IRP) for Carswell Air Force Base, Texas: Phase II Feasibility Study for the East Area", prepared for Headquarters Strategic Air Command (HQ SAC/DE), Offutt Air Force Base, Nebraska 68113, Contract No. F33615-87-D-4023.

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